

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES**

In re patent application of:

Liu, et al.

Atty. Docket No.: YOR920030104US1

Serial No.: 10/674,334

Group Art Unit: 2145

Filed: September 30, 2003

Examiner: Liu, Lin

For: METHOD OF ESTABLISHING TRANSMISSION HEADERS FOR
STATELESS GROUP COMMUNICATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPELLANTS' REPLY BRIEF

Sirs:

The undersigned thanks the Examiner for the helpful arguments presented in response to Appellants' Appeal Brief, that begin on page 15 (paragraph 12) of the Examiner's Answer, and this Reply Brief is directed to such comments. Appellants note that a fundamental difference in opinion exists regarding the teaching of the primary reference Crawley, as evidenced by the discussion occurring in paragraph 13 appearing on page 16 of the Examiner's Answer. This disagreement regarding Crawley's teachings reverberates throughout the remaining discussion. Therefore, if the distinction between the claims and Crawley presented below is appreciated, it is Appellants' position that a reader will be persuaded toward Appellants' arguments and eventual conclusion of patentability presented in Appellants' Appeal Brief.

In paragraph 13 of the Examiner's Answer, the Examiner argues that Crawley adds a header containing a distribution tree to a data packet. One of the points of novelty of the claimed invention is that it adds a special header containing a distribution tree to a data packet, and modifies the distribution tree within the header as the data packet travels

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down the distribution tree. It is Appellant's position that Crawley does not involve distribution of data packets within a distribution tree, but instead Crawley sends an "advertisement" that reserves the use of nodes within an area of a network before transmitting any data. By selecting and reserving a route before sending data, Crawley helps to guarantee a preestablished quality of service (QoS) level, even in a connectionless environment. However, Crawley does not add a header to a data packet, and does not alter a data packet's header as the data packet travels down a distribution tree.

As discussed in greater detail below, the items such as the Link State advertisement (LSA); resource reservation advertisement (RRA); and the explicit routing advertisement (ERA) discussed in Crawley are items that advertise a route's availability and reserve a chosen route upon which data packets will be subsequently transmitted. However, none of these "advertisements" in Crawley are actual data packets, but instead are items utilized to find and reserve a datapath that will meet a specific quality of service level.

This is shown, for example, by the paragraph appearing in column 10, lines 29-37 of Crawley which describes two different types of ERAs. One is an installation ERA which preserves nodes (routers) within a given area of the network, and the other is a flushing ERA which releases the reservation on routers that are no longer needed (because either the data transmission has completed or because the route has been dynamically changed during the data transmission). This demonstrates that the ERA (which the Office Action proposes is a data packet) is actually a file that reserves nodes (routers) and is not a data packet.

In other words, it is Appellants' position that Crawley does not discuss any details regarding data packets (except the subsequent transmitting of data packets through a reserved route that will comply with a specific quality of service level). Instead, Crawley discusses many details regarding "advertisement" items that identify and reserve specific routes within areas of networks that will meet a specific quality of service level.

Therefore, any discussion regarding the headers used in Crawley is misplaced with regard to headers of data packets, because the "advertisement" files used to reserve routes within Crawley would not provide any teachings for the headers used in the data packets that are transmitted along such a reserved route.

As is known to those ordinarily skilled in the art, one method for processing a data item is to "packetize" the data item by dividing the item into smaller data packets. The term "data packet" is a very well known term of art within the data transmission industry and is known to be a smaller part of a larger item that, when reassembled with other data packets, reproduce the larger item. While it is argued that there is "data" in the advertisement files of Crawley, such files would never be considered by those ordinarily skilled in the art to be equivalent to the claimed term "data packets" because such advertisement files in Crawley cannot be reassembled into larger items, as data packets can.

When data packets are used with a distribution tree, the distribution tree controls the order in which the nodes receive the data packets. By controlling the order in which the nodes receive the data packets, the encoding of the distribution tree permits the nodes to process the data packets in an order specified by the tree hierarchy. Upon receipt, the recipient reassembles all the packets into the original item.

The claimed invention includes "creating a header including said encoded distribution tree; adding said header to a data packet to be distributed to said distribution tree." (claim 1, lines 4-5, claim 8, lines 4-5, claim 15, lines 4-5, claim 21, lines 6-7). Therefore, with the claimed invention, the headers obtained by encoding the distribution trees are inserted in each data packet. Further, the claims provide "modifying said header as said data packet is distributed down said distribution tree to remove encoded information concerning upper distribution levels of said distribution tree" (claim 1, lines 7-9, claim 8, lines 9-11, claim 15, lines 11-13, claim 21, lines 9-11). Therefore, the claimed invention includes mechanisms for processing the encoded header at intermediate nodes in the distribution tree in order to determine the next communication

nodes and mechanisms for modification and re-encoding of the trees in order to provide resilience to network failures or to react to application level specified conditions. Further, this minimizes the overhead of the header and the processing required for partial decoding of the distribution tree.

As mentioned above, the items such as the Link State Advertisement (LSA); Resource Reservation Advertisement (RRA); and the Explicit Routing Advertisement (ERA) discussed in Crawley are items that advertise a route's availability and reserve a chosen route upon which data packets will be subsequently transmitted, and none of these "advertisements" in Crawley are actual data packets, but instead are items utilized to find and reserve a datapath that will meet a specific quality of service level. For example, as mentioned in the paragraphs appearing in column 2, lines 18-20 and lines 27-33 in Crawley, it is difficult to provide quality of service guarantees in a connectionless network, and the disclosure in Crawley is directed to solving such a problem.

Crawley explains, in the paragraph appearing in column 4, lines 40-54 that Crawley allows quality of service guarantees to be met for routing in a connectionless network by advertising various information about the network nodes (e.g., routers) and network links (or connections) in the network. Specifically, Crawley provides a mechanism for advertising available resources (e.g., available bandwidth) for a particular router to other routers in the network. These advertisements inform other routers of the resources available on each link in the network. These advertisements are referred to as Link State Advertisement (LSAs). As mentioned in the paragraph bridging columns 4 and 5, Link Resource Advertisements contain information regarding link resources available for a particular node in the network. Each Link Resource Advertisement is broadcast to other nodes in the network or area. By broadcasting Link Resource Advertisements throughout the network or area, each node in the network learns of the available resources on the various links.

Further, Crawley discusses that the Explicit Routing Advertisement (ERA) reserves various routes using an installing ERA (paragraph appearing in column 10, lines

29-37 of Crawley) This creates the Resource Reservation Advertisement (RRA) discussed in the paragraph in column 5, lines 14-26. The Resource Reservation Advertisement in Crawley contains information regarding a node's existing reservations for a particular data flow; i.e., a particular source-destination data flow. Each Resource Reservation Advertisement is broadcast to other nodes in the network. By broadcasting Resource Reservation Advertisements, each node in the network learns of the resources already reserved by existing data flows. These existing reservations are considered when calculating or recalculating paths.

Also, the paragraph appearing in column 10, lines 29-37 of Crawley explains that two different types of ERAs may be used with explicit routing, an Installation ERA and a Flushing ERA. The Installation ERA is used to distribute forwarding information to other routers in the network. The Flushing ERA is used to remove obsolete forwarding information from the routers. The Flushing ERA may be used when a route changes, thereby removing the route information contained in a previous Installation ERA.

Therefore, it is Appellants' position that the ERA is not equivalent to a data packet, as such terms are known to those ordinarily skilled in the art, because the ERA does not contain any packet data that could be recombined to recreate a larger item. Thus, any teachings concerning the header of Crawley would not be applied by one ordinarily skilled in the art to the header of a data packet.

Further, Crawley creates a different ERA for each reserved node and does not pass the ERA down the distribution tree, but instead sends each router a different ERA directly from an initial router (column 12, lines 33-47). Therefore, Crawley does not alter the distribution tree in the header each time an ERA passes a node (router) because each ERA created by the initial router is different and is send directly to each router from the initial router, without being altered by any other routers. To the contrary, the claimed invention includes "modifying said header as said data packet is distributed down said distribution tree to remove encoded information concerning upper distribution levels of

said distribution tree" (claim 1, lines 7-9, claim 8, lines 9-11, claim 15, lines 11-13, claim 21, lines 9-11).

Thus, Crawley uses the initial routers to generate a separate ERA for each of the succeeding routers in the selected route. For example, Crawley explains, in the example discussed in column 12, lines 33-47, that the initial router A creates an ERA for router B and a different ERA for router C. Therefore, Crawley sends a different ERA to each node or router, and the ERAs do not alter the ERA or its header after the initial router creates the ERA. Thus, Crawley does not alter the header as each ERA is passed from router to router (Crawley does not pass the ERA's from router to router, but instead sends a unique ERA to each router). This is fundamentally different than what is provided for in the claims because the claims pass a single data packet through a series of nodes, and as each node is passed, the header of the data packet is modified by each successive node to remove the information of the upper distribution levels.

Therefore, Appellants respectfully submit that Crawley does not discuss the details of data packets and does not discuss anything about a header for a data packet. Further, Crawley does not teach one of the fundamental features of the claimed invention, that being the ability to change the header as the data packet is passed from node to succeeding node (Crawley sends a different ERA to each node or router, and the routers in Crawley do not alter the ERAs).

While the arguments presented in the Appeal Brief are not repeated here, the reader should realize that because of this fundamental difference between these aspects of independent claims 1, 8, 15, and 21, and Crawley, the more specific details of the rejection that are argued in detail in the Appeal Brief have strong merit.

Therefore, while Appellants submit that all the claimed features discussed in the Appeal Brief are patentable, Appellants stress herein that Crawley is fundamentally different than the claimed invention because Crawley does not deal with headers of data packets and does not alter the header as the ERA pass from router to router (because Crawley sends a different ERA to each router from the initial router). Thus, it is

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Appellants' position that Crawley does not disclose "adding said header to a data packet to be distributed to said distribution tree . . . and modifying said header as said data packet is distributed down said distribution tree to remove encoded information concerning upper distribution levels of said distribution tree" as defined by independent claim 1 and similarly defined by independent claims 8, 15, and 21.

In view the forgoing, the Board is respectfully requested to reconsider and withdraw the rejections of claims 1, 3-8,10-15, 17-21, and 23-31.

Please charge any deficiencies and credit any overpayments to Attorney's Deposit Account Number 50-0510.

Respectfully submitted,

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